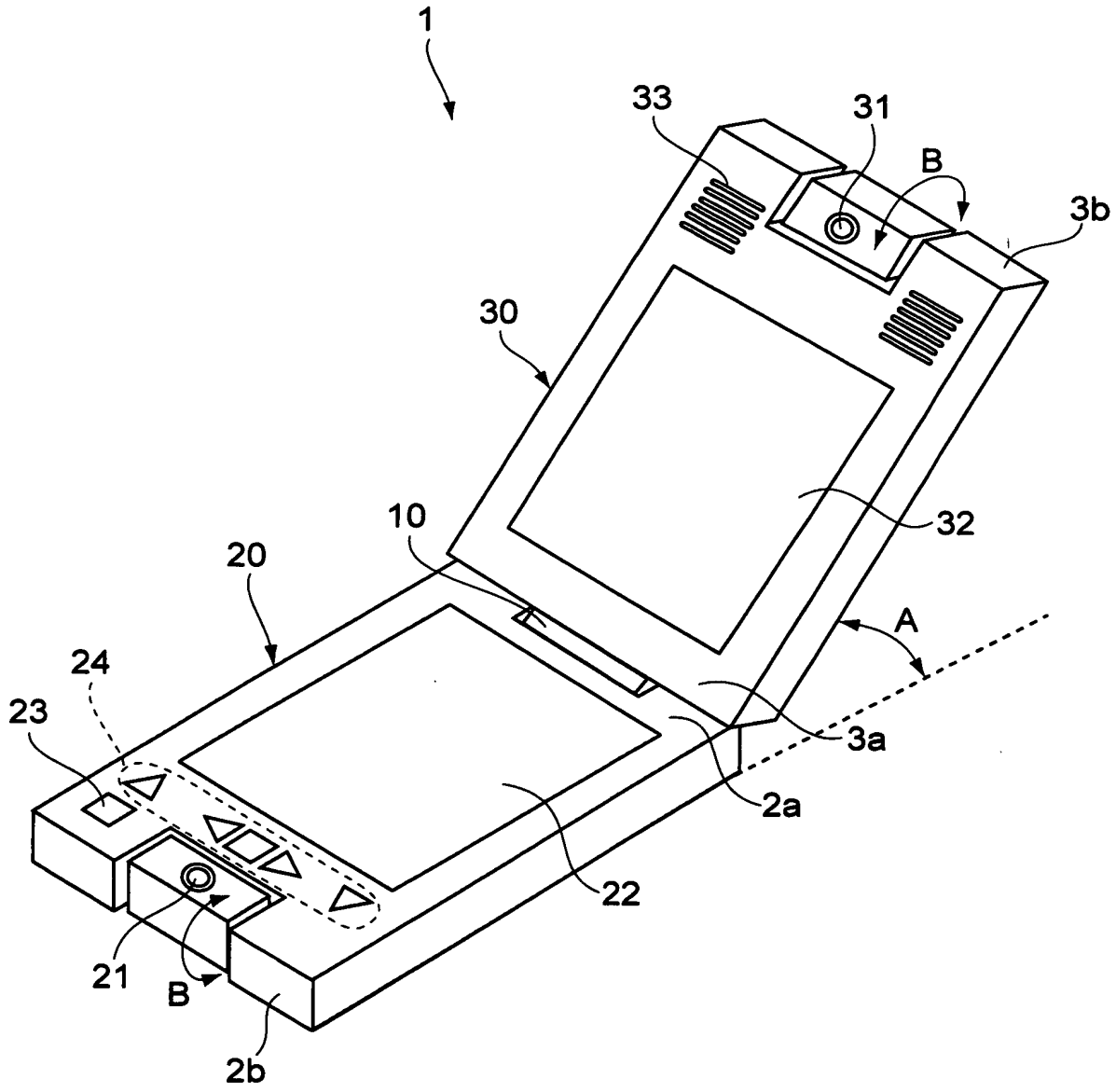

FIG.1

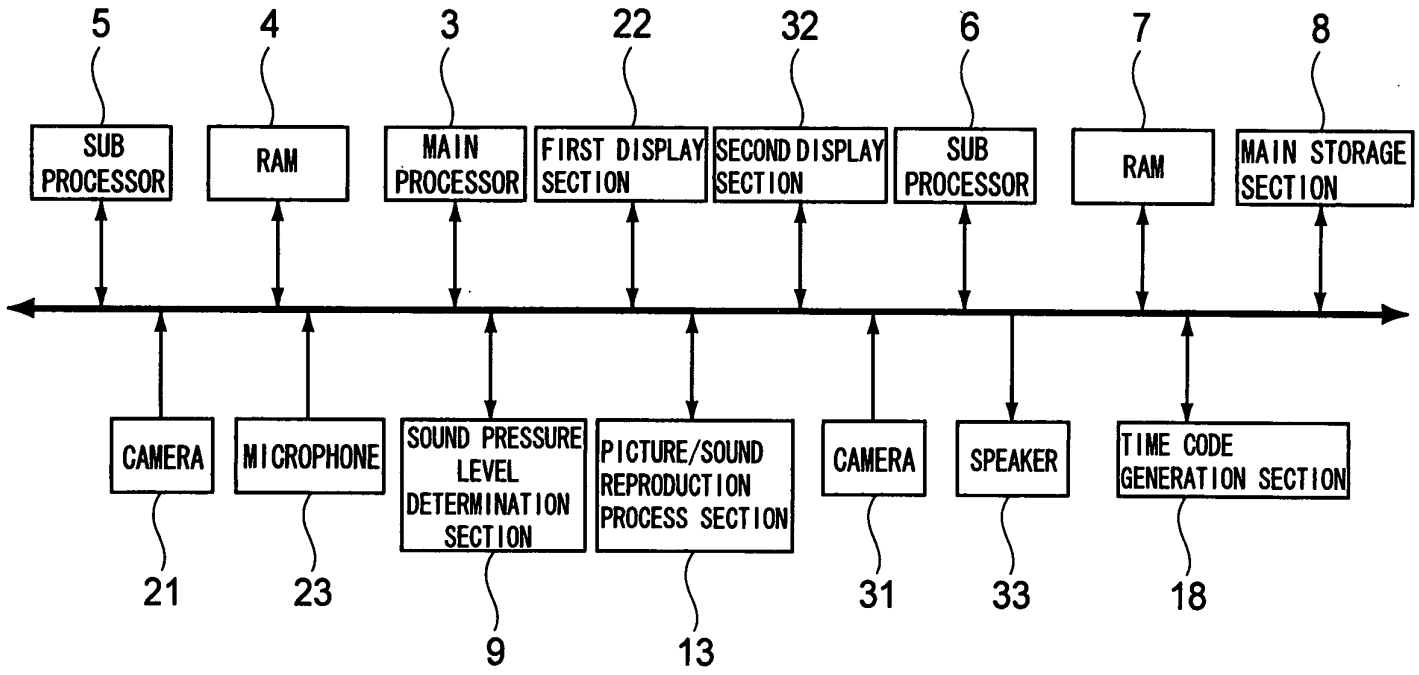
5
4
3
22
32
6
7
8
SUB PROCESSOR
RAM
MAIN PROCESSOR
FIRST DISPLAY SECTION
SECOND DISPLAY SECTION
SUB PROCESSOR
RAM
MAIN STORAGE SECTION
CAMERA
MICROPHONE
SOUND PRESSURE LEVEL DETERMINATION SECTION
PICTURE/SOUND REPRODUCTION PROCESS SECTION
CAMERA
SPEAKER
TIME CODE GENERATION SECTION
21
23
9
13
31
33
18

FIG.2

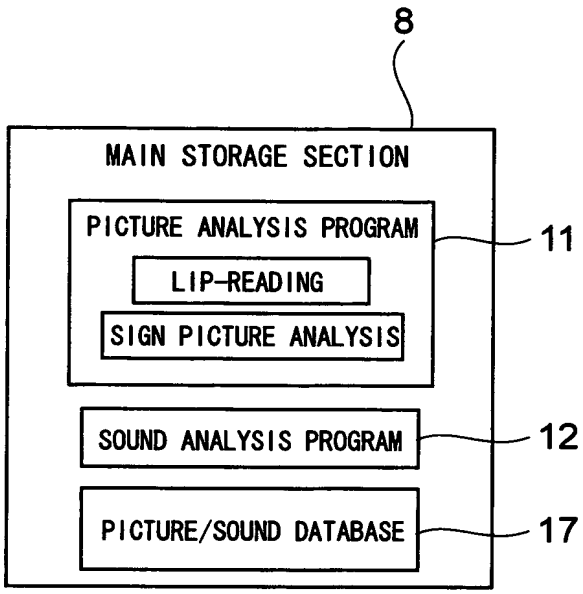
8
MAIN STORAGE SECTION
PICTURE ANALYSIS PROGRAM
LIP-READING
SIGN PICTURE ANALYSIS
11
SOUND ANALYSIS PROGRAM
12
PICTURE/SOUND DATABASE
17

FIG.3

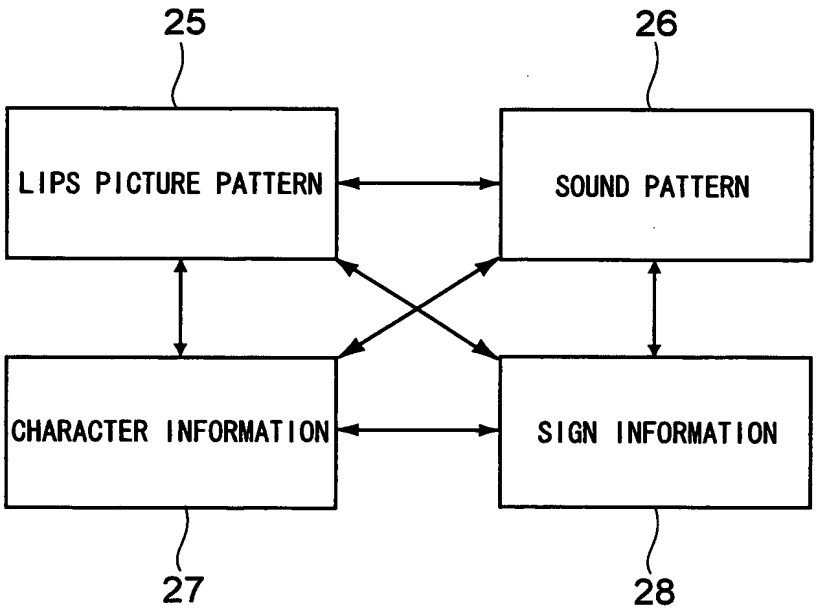
25
26
LIPS PICTURE PATTERN
SOUND PATTERN
CHARACTER INFORMATION
SIGN INFORMATION
27
28

FIG.4

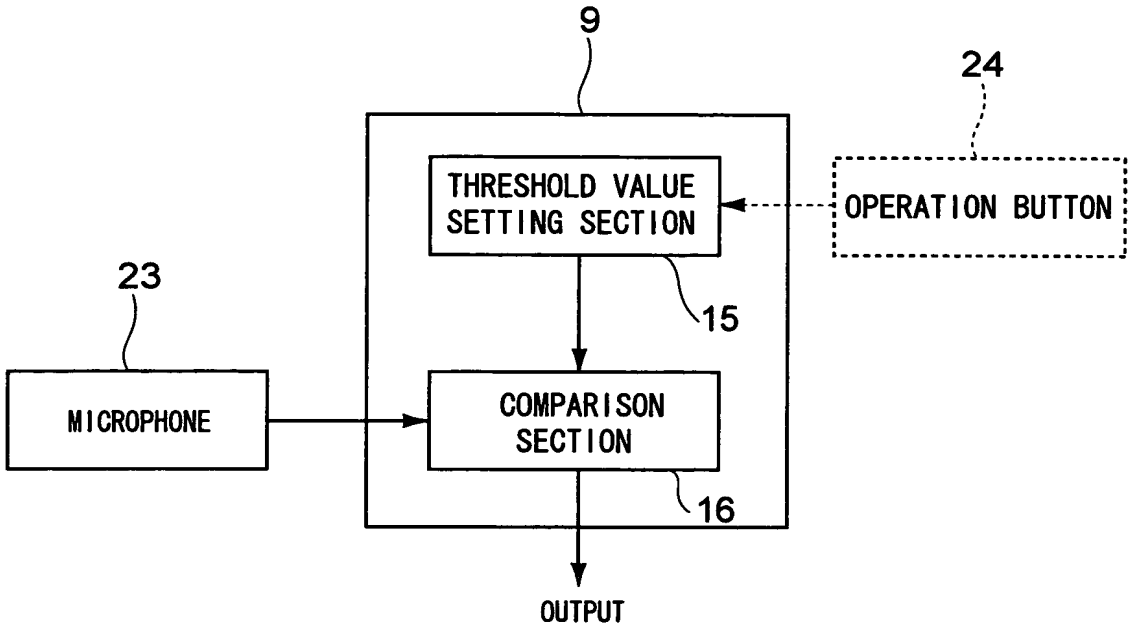
9
24
THRESHOLD VALUE SETTING SECTION
OPERATION BUTTON
15
23
MICROPHONE
COMPARISON SECTION
16
OUTPUT

FIG.5

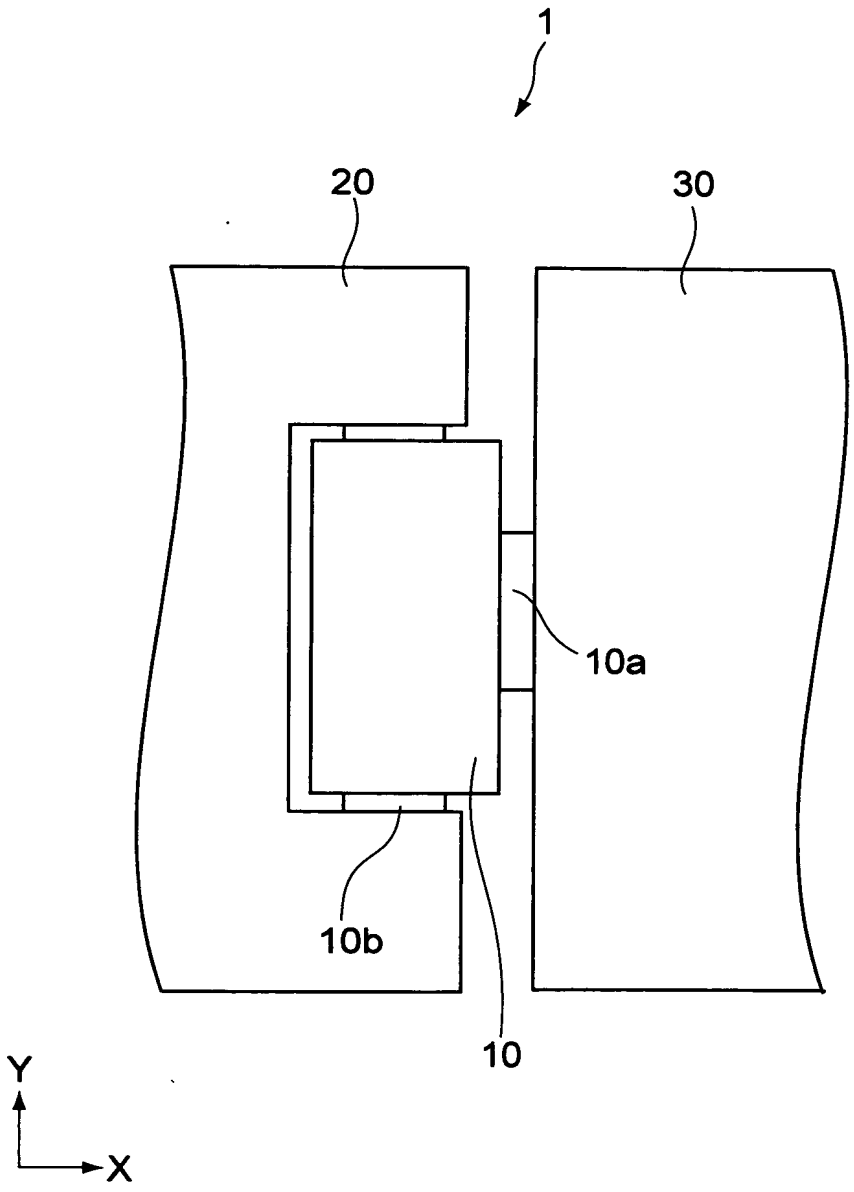

FIG.6

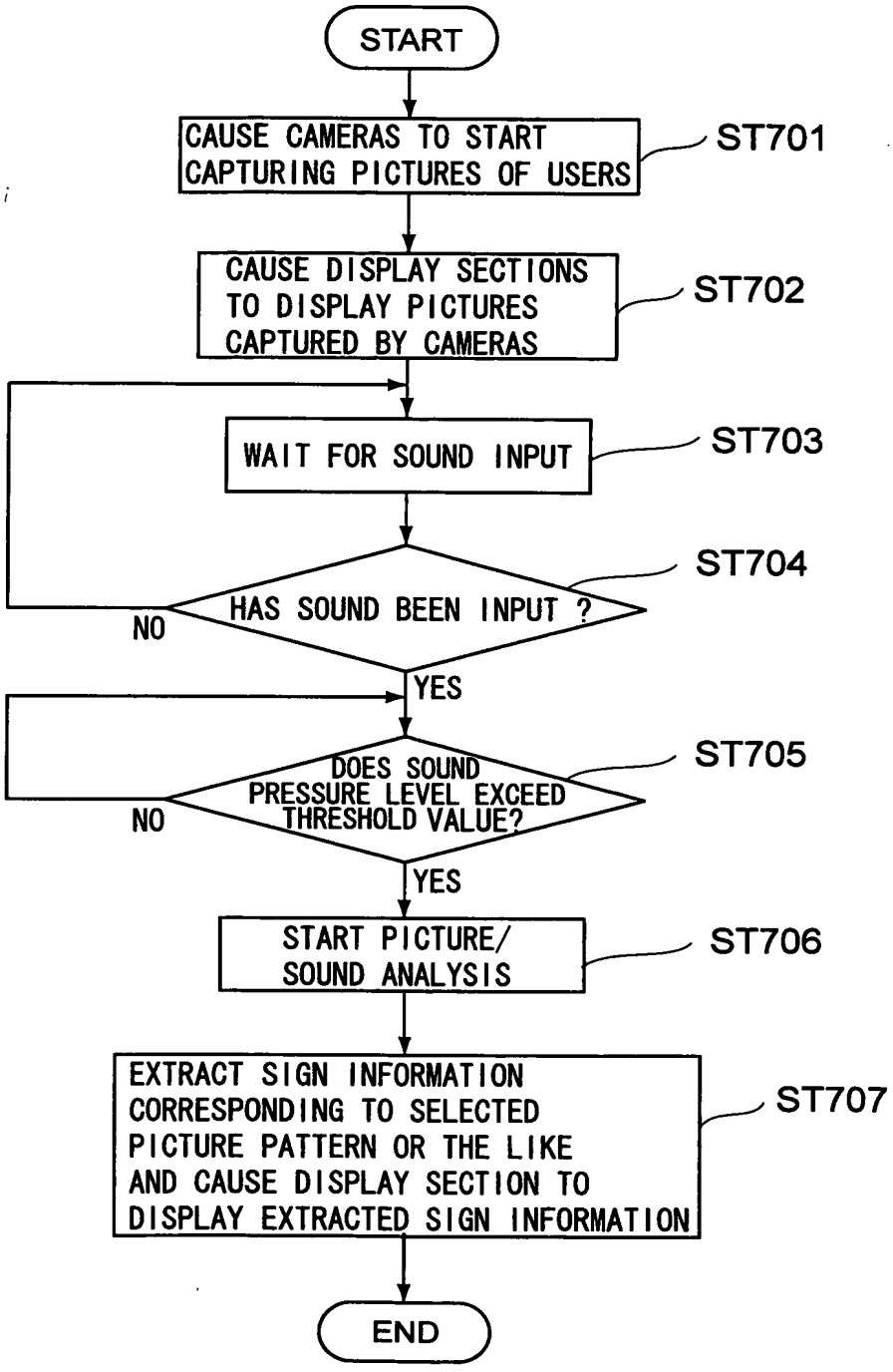
START
CAUSE CAMERAS TO START CAPTURING PICTURES OF USERS
ST701
CAUSE DISPLAY SECTIONS TO DISPLAY PICTURES CAPTURED BY CAMERAS
ST702
WAIT FOR SOUND INPUT
ST703
HAS SOUND BEEN INPUT ?
ST704
NO
YES
DOES SOUND PRESSURE LEVEL EXCEED THRESHOLD VALUE?
ST705
NO
YES
START PICTURE/ SOUND ANALYSIS
ST706
EXTRACT SIGN INFORMATION CORRESPONDING TO SELECTED PICTURE PATTERN OR THE LIKE AND CAUSE DISPLAY SECTION TO DISPLAY EXTRACTED SIGN INFORMATION
ST707
END

FIG.7

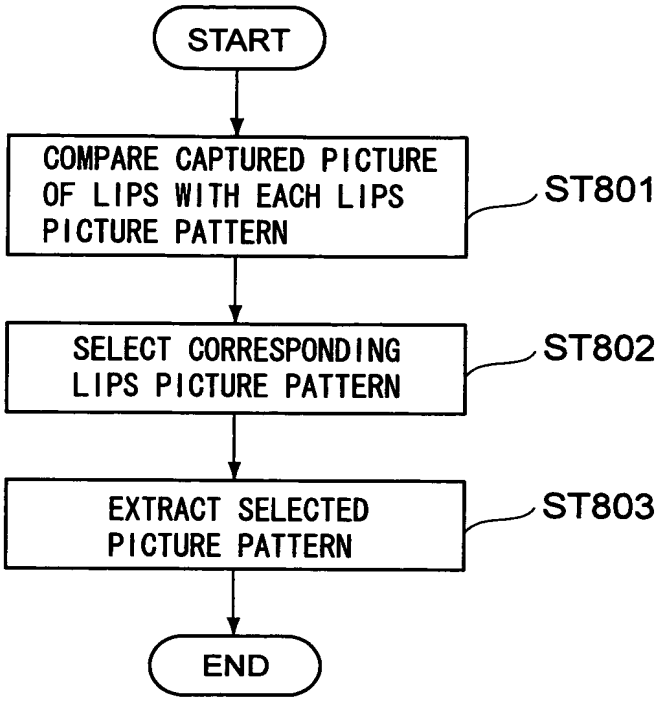
START
COMPARE CAPTURED PICTURE OF LIPS WITH EACH LIPS PICTURE PATTERN
ST801
SELECT CORRESPONDING LIPS PICTURE PATTERN
ST802
EXTRACT SELECTED PICTURE PATTERN
ST803
END

FIG.8

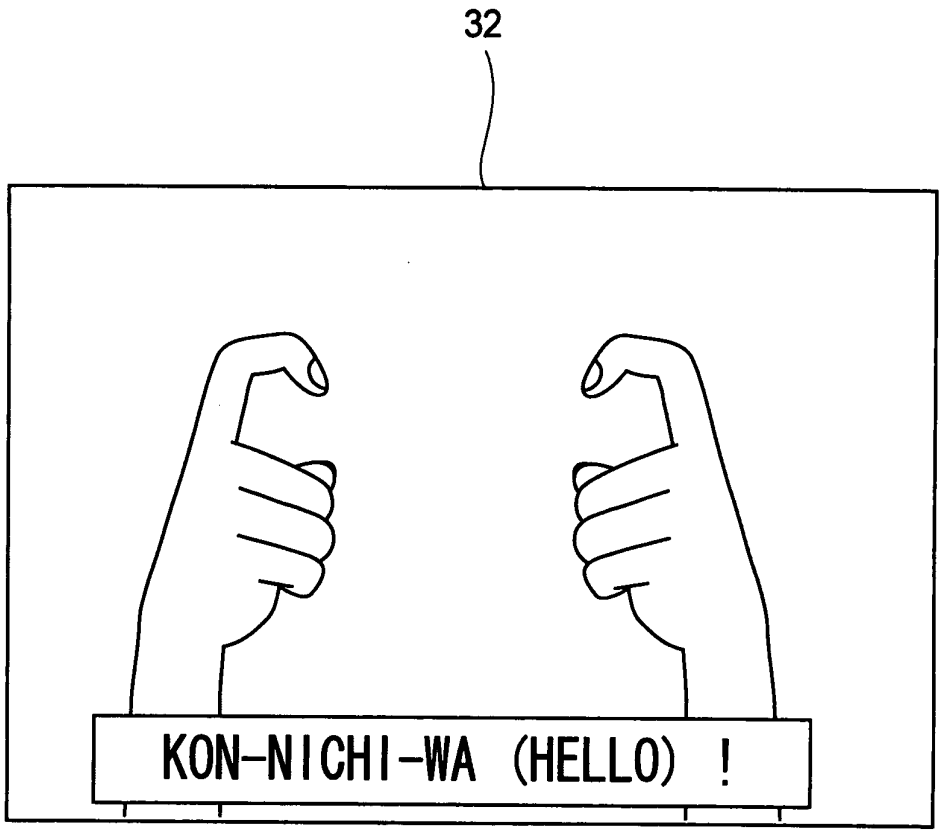

FIG.9

40

LIPS SHAPE PATTERNS	CONVERSION TABLE ID
	1
	2
	3
⋮	⋮

FIG.10

45

CONVERSION TABLE ID = 7

LIPS PICTURE PATTERN	CHARACTER INFORMATION
	A
	I
	U
⋮	⋮

FIG.11

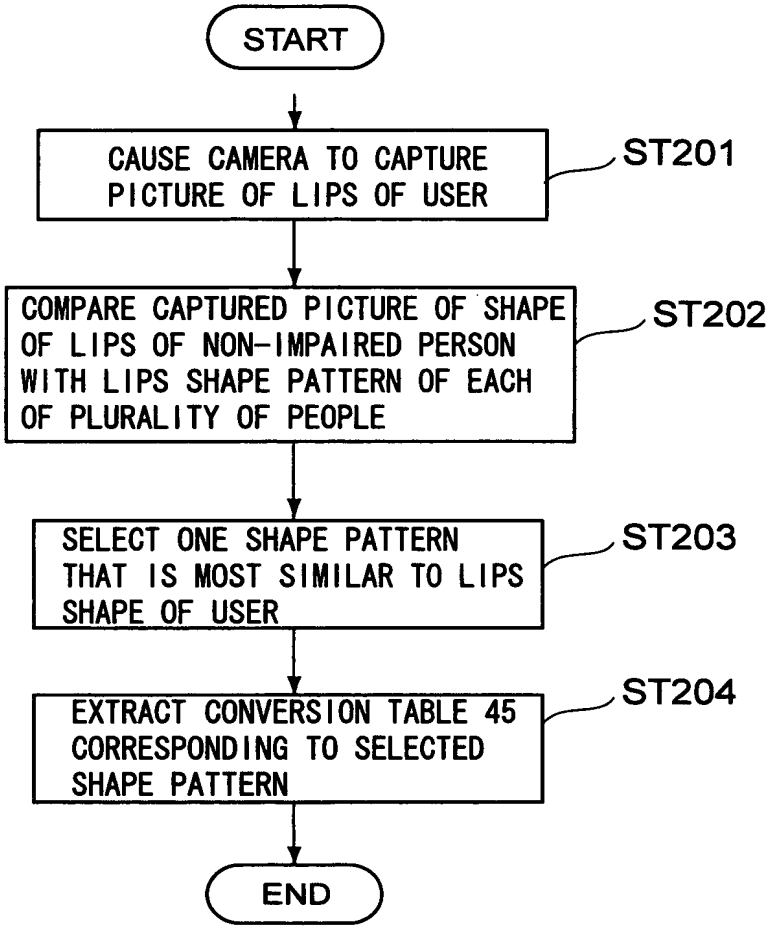
START
CAUSE CAMERA TO CAPTURE PICTURE OF LIPS OF USER
ST201
COMPARE CAPTURED PICTURE OF SHAPE OF LIPS OF NON-IMPAIRED PERSON WITH LIPS SHAPE PATTERN OF EACH OF PLURALITY OF PEOPLE
ST202
SELECT ONE SHAPE PATTERN THAT IS MOST SIMILAR TO LIPS SHAPE OF USER
ST203
EXTRACT CONVERSION TABLE 45 CORRESPONDING TO SELECTED SHAPE PATTERN
ST204
END

FIG.12

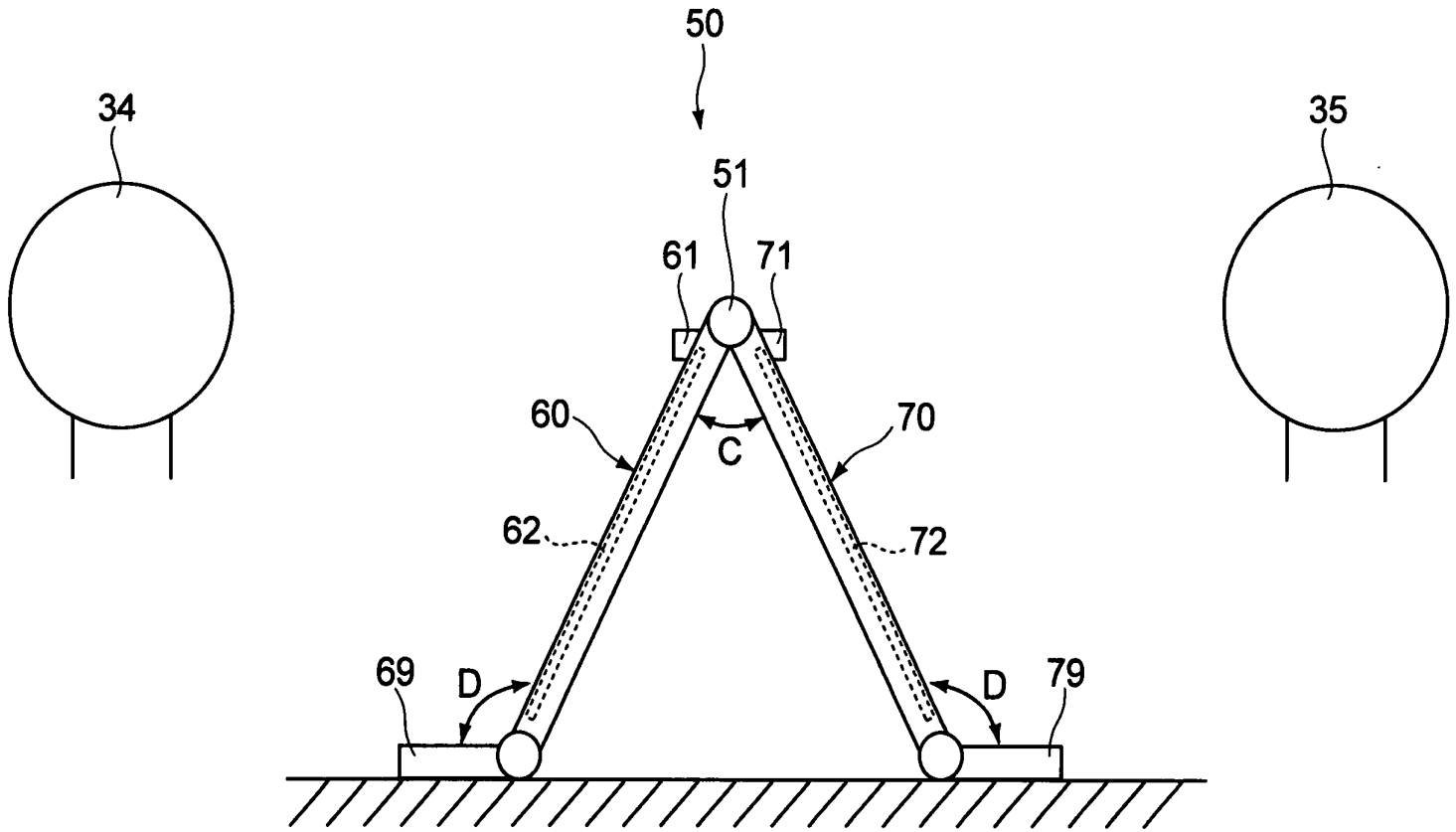

FIG.13